

# Regional research collaboration fights sugar beet disease

A collaboration between a Norwich Research Park company and British Sugar aims to sustainably safeguard the sugar beet crop from a deadly virus.

**A** collaboration between agricultural biotech company Tropic and scientists based at Norwich Research Park with British Sugar aims to sustainably safeguard the region's sugar beet crop from a deadly virus.

Sugar beet is an important crop for the UK economy and especially so in the East of England. The industry supports 9,000 jobs across the UK and supplies more than 50pc of the country's demand for sugar.

But the industry is under threat from a disease known as Virus Yellows which can cause severe crop damage. Growers have reported yield losses of up to 80pc in recent years.

Current measures to counteract Virus Yellows include neonicotinoid pesticides to neutralise the aphid carrier that transmits the disease. Their use must be authorised by the Department for Environment, Food & Rural Affairs (DEFRA), but it is now accepted that this is not a sustainable long-term solution, as the chemicals are controversial and perceived by some to be harmful to the environment and certain insects that are beneficial to the food chain.

British Sugar is working with agricultural biotech company Tropic along with the British Beet Research Organisation (BBRO), both based at Norwich Research Park, to look for a more robust and durable solution. Historically, conventional breeding has helped scientists develop new varieties of sugar beet with greater viral tolerance, but this breeding process takes many years. Since the disease threat is critical, the industry needs a quicker and more effective solution.

Tropic is dedicated to the development of healthier, higher-performing tropical crops under threat from devastating diseases. It specialises in advanced gene editing technologies that introduce genetic changes to improve food quality and disease resistance. These precise changes made within the genome of an organism occur naturally, just not



Norwich Research Park scientists are sustainably safeguarding East Anglia's sugar beet crop from a deadly virus

Picture: GETTY / ISTOCKPHOTO



Dan Green, agricultural director at British Sugar, Ofir Meir, chief technology officer at Tropic, Vicky Foster, head of BBRO, Roz Bird, CEO of Anglia Innovation Partnership LLP



often. Gene editing makes it possible to immediately introduce genetic improvements, significantly speeding up the breeding process.

Tropic has already improved varieties of banana, coffee and rice, which together provide a source of livelihood for over half a billion people worldwide. Within Tropic's gene editing toolbox is a powerful platform called Gene Editing induced Gene Silencing (GEiGS®) that enables scientists to accelerate seed breeding of disease-resistant crops by redirecting the plant's own defence mechanisms towards attacking pathogens.

Agricultural director at British Sugar Dan Green said: "As we reduce pesticide use, we are

improving grower practices and accelerating conventional seed breeding. The partnership with Tropic on precision breeding through gene editing will, we believe, deliver a long-term solution to tackle this disease. It is fantastic that we can support cutting-edge science, right here, in the heart of East Anglia."

Chief technology officer at Tropic Ofir Meir said: "The benefits of our technology are numerous. We are particularly excited by its potential to develop a sustainable, long-term solution for the sugar beet industry and play a crucial role not just in reducing pesticide use but safeguarding domestic farming for one of Britain's essential crops."

The BBRO has extensive



knowledge of how sugar beet is farmed and has been heavily involved in the project in a consultancy capacity to provide farmer insight and experience on how devastating Virus Yellows can be.

Head of BBRO Vicky Foster said: "We are delighted to see the industry working together to take this initiative forward. It's so important we make the most of precision breeding technology to look for new solutions for a more sustainable future."

The introduction of gene editing in crops will radically reduce the volume of pesticides used worldwide, while enabling rapid responses to emerging pests and pathogens. This will ultimately boost the world's crop health



and food security. CEO of Anglia Innovation Partnership LLP Roz Bird said: "This work is a really great example of how the collaboration between business and science that exists on our campus can come up with truly powerful answers to some of the most challenging issues our world faces."

"In this case, the threat to UK sugar beet production by a dangerous virus can be addressed without resorting to the widespread use of pesticides so that the livelihoods of growers and the many jobs across the industry can be protected. That's got to be a win-win situation."

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